

What is claimed is:

1. An on-vehicle electronic controller comprising:  
a microprocessor including a nonvolatile memory, in which a control program for a controlled vehicle, a control constant, and so on are written from an external tool, and a RAM memory for computing;

an integrated circuit including a direct input interface circuit and a direct output interface circuit that are connected to a data bus of the microprocessor, an indirect input interface circuit and a variable filter circuit having a constant setting register, and a communication control circuit; and

an interactive serial communication circuits for transmitting a plurality of external input signals to the RAM memory, the signals being inputted via the indirect input interface circuits, and for transmitting a filter constant stored in the nonvolatile memory to the constant setting register of the variable filter circuit.

2. The on-vehicle electronic controller according to claim 1, wherein some of the indirect input interface circuits are interface circuits for ON/OFF signals, each circuit being constituted by a low-resistance bleeder resistor acting as a load on an input switch, a noise filter composed of a high-resistance series resistor and a small capacitor, and a level-judging comparator having a hysteresis function; the variable filter circuit is constituted by an input deciding register, which is set when a plurality of consecutive level

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judging results being sampled and stored with a predetermined period are all YES, and which is reset when a plurality of consecutive level judging results are all NO, and a constant setting register for storing a value of at least one of the sampling period and the number of logic judging points for setting/resetting; the output of the input deciding register is transmitted to the RAM memory; and the value of at least one of the sampling period and the number of the logic judging points for setting/resetting is transmitted from the nonvolatile memory to the constant setting register.

3. The on-vehicle electronic controller according to claim 1, wherein some of the indirect input interface circuits are interface circuits for an analog signal, each circuit being composed of a noise filter including positive and negative clip diodes and a small capacitor, the variable filter circuit is constituted by a switched capacitor, which is periodically charged and discharged by a switch, and a constant setting register for storing a value of a charging/discharging period, the output of the switched capacitor is converted to a digital value via an A/D converter, the digital converted value is transmitted to the RAM memory, and a value of a charging/discharging period is transmitted from the nonvolatile memory to the constant setting register.

4. The on-vehicle electronic controller according to claim 1, wherein part of control output of the microprocessor is supplied to a latch memory which stores a transmitted control output signal via the interactive serial

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communication circuit, and then to an external load via an indirect output interface circuit connected to the output of the latch memory.

5. The on-vehicle electronic controller according to claim 1, wherein direct input and direct output supplied to the data bus of the microprocessor require fast response in an operation such as ignition control of an engine and control of fuel injection, and indirect input and indirect output communicated with the microprocessor via the interactive serial communication circuit are input signals of low-speed and low-frequency operations of a manual operation signal, a temperature sensor, a water temperature sensor and so on, or output signals of low-speed and low-frequency operations of auxiliary output, warning display output and so on.

6. The on-vehicle electronic controller according to claim 1, wherein the microprocessor transmits a filter constant and a command of input information transmission request that follow a command of filter constant transmission guide to the integrated circuit via the interactive serial communication circuit, and the integrated circuit stores a received filter constant in the constant setting register and transmits indirect input signal information following a command of input information reply guide to the RAM memory via the interactive serial communication circuit and the microprocessor.

7. The on-vehicle electronic controller according to claim 1, wherein the microprocessor transmits a filter

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constant following the command of filter constant transmission guide and indirect output information or input information transmission request that follows the command of output information transmission guide to the integrated circuit via the interactive serial communication circuit, and the integrated circuit stores a received filter constant and indirect output information in the constant setting register and the latch memory and transmits indirect input signal information following the command of input information reply guide to the RAM memory via the interactive serial communication circuit and the microprocessor.

8. The on-vehicle electronic controller according to claim 1, wherein the microprocessor transmits address information following a command of specific input information transmission request to the integrated circuit via the interactive serial communication circuit, and the integrated circuit transmits indirect input information of a designated address following a command of specific input information reply guide to the RAM memory via the interactive communication circuit and the microprocessor.

9. The on-vehicle electronic controller according to claim 1, wherein the microprocessor transmits address information and a filter constant that follow a command of specific constant transmission guide to the integrated circuit via the interactive serial communication circuit, and the integrated circuit stores the received filter constant in the constant setting register at a designated address.

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